

# Advanced Engineered Formulations of Suramin Microparticles and Nanoparticles for Drug Delivery and Applications Therein

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## Technology description

### Invention

This invention consists of new advanced formulations of the drug Suramin for administration by multiple routes. In addition, the invention surrounds the process and manufacturing of these newly formulated Suramin microparticles and nanoparticles so they can be effectively used in the treatment of wounds. Specifically, these new formulations would be utilized for wound healing purposes in mucositis and diabetic foot ulcers.

### Background

Oral mucositis is a horrible consequence of chemotherapy and radiation treatment of head and neck cancer, the third most common cancers with nearly 550,000 cases per year. However, chemotherapy and radiation have horrible side effects, with the most common being ulcers and sores of the mouth and throat, otherwise known as mucositis. Nearly 40% of patients undergoing chemotherapy and 100% of patients receiving radiation experience mucositis, which results in pain, trouble breathing and swallowing, and infections. In addition, diabetic foot ulcers occur in nearly 15% of all diabetic patients and precede nearly 85% of all diabetic related amputations.

These serious complications of highly prevalent diseases have very limited treatment options. If left untreated, mucositis and diabetic foot ulcers have horrible effects on patients ranging from pain and infections to the loss of a limb. This invention re-formulates Suramin to help promote wound healing. Currently, Suramin can only be administered intravenously, which means a medical professional must administer each dose and each dose is delivered invasively. This technology could potentially allow Suramin to be administered by more patient-friendly routes including non-invasive targeted routes. Early studies have already shown its effectiveness in increasing the healing process of diabetic related sores in a mouse model.

## Application area

- Treatment of mucositis related wounds
- Treatment of diabetic foot ulcers

## Advantages

- Easier routes of administration and targeted drug delivery
- Use of Suramin to treat different disease states

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